

# **Sustainable Development Strategy of the Technical University of Sofia**

**2023-2030**

# Sustainable Development Strategy of the Technical University of Sofia

In 1987, the United Nations Brundtland Commission defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” The term sustainable development contains two key concepts:

1. the concept of "needs", specifically the basic needs of the world's poor, which should be given top priority;
2. the idea of the limitations imposed by the state of technology and social organization on the ability of the environment to meet present and future needs.

THE TECHNICAL UNIVERSITY OF SOFIA STRIVES TO FOLLOW THE CONCEPT OF SUSTAINABLE DEVELOPMENT IN ALL ITS ACTIVITIES RELATED TO TEACHING, SCIENTIFIC, ADMINISTRATIVE, SOCIAL, SPORTING AND OTHER ACTIVITIES, OBSERVING THE FOUR BASIC PRINCIPLES OF SUSTAINABLE DEVELOPMENT:

A sustainable future is based on the physical balance between what the Earth produces in materials, energy and ecosystem services and our need to provide the essentials for our survival and that of all other species.

The idea of sustainability ends the long period of human history that accepted the inevitable destruction of ecosystems and harm to other species on Earth and initiates and sustains a new era of flourishing for all species on the planet.

A sustainable future is a humane and just socio-political, economic and cultural reality that values all human life and provides resources for all generations today and in the future.

A sustainable economy must be fundamentally based on a global circular economy powered by renewable energy.

**Achieving sustainable development at the Technical University involves several steps and requires the commitment and cooperation of all stakeholders, including students, academic and administrative staff. The main steps to successfully integrate sustainability in the university include:**

- 1. A sustainability plan development, which includes specific goals and actions to reduce the impact of the Technical University of Sofia on the environment and promote sustainability.*
- 2. Integrating sustainability into curricula by offering courses on sustainability-related topics, incorporating sustainability into existing curricula, and promoting research and projects that address the challenges of sustainable development.*
- 3. Reducing the impact of the university's activities on the environment by implementing energy-efficient technologies, reducing waste, promoting sustainable transport options and supplying sustainable products and materials.*
- 4. Promoting sustainable behavior among students and staff by providing sustainability education, promoting sustainable practices such as recycling and composting, and incentivizing sustainable behavior through rewards and recognition.*
- 5. Engaging the local community by building partnerships with local organizations to address sustainability challenges, promote community sustainability initiatives, and provide education and outreach on sustainability topics.*
- 6. Quantify and report performance in achieving sustainability to track progress, identify areas for improvement and present sustainability results to stakeholders.*

**This document outlines the goals and actions that the Technical University of Sofia strives to implement in order to achieve maximum integration of sustainability in all its activities**

# MAIN SECTORS,

on which the Technical University of Sofia strives to have an impact to achieve the goals of sustainable development by applying the approaches of technical measures, sustainability in education and sustainability in science



Figure 1. Main sectors on which Technical University of Sofia has an impact

# 17 SUSTAINABLE DEVELOPMENT GOALS

On September 25, 2015, in New York during the Sustainable Development Summit within the framework of the United Nations, the Post-2015 Development Agenda "Transforming our world: Agenda for sustainable development until 2030" was adopted. The document was approved by all 193 UN member states, including Bulgaria. The program consists of five parts and 17 Sustainable Development Goals (SDGs) are listed and formulated in it. There are 169 sub-goals in total. As the main emphasis in the Program, the most acute problems of developing countries related to overcoming extreme poverty, hunger, diseases, etc. are highlighted. Issues are added related to environmental protection, achieving sustainable economic development and consumption, building and functioning of democratic institutions, elements of respect for human rights, gender equality and others.

By implementing a program that is aligned with the Sustainable Development Goals, universities can contribute to global efforts to address some of the world's most pressing challenges. In this context, the Technical University of Sofia carried out a self-assessment of its impact on the achievement of the defined goals, identifying the various available measures and activities from its work in two categories: indirect and direct impact.

The Technical University of Sofia has an indirect impact on the achievement of 7 out of the seventeen goals for sustainable development through various types of scientific activities such as publishing scientific articles, scientific literature and textbooks, leading and participating in scientific research projects and projects with business. The specific objectives are presented in Figure 2.






Figure 2. Goals through which TU-Sofia has an indirect impact

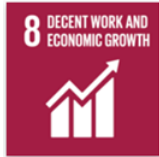
According to the Technical University's self-assessment regarding its role in achieving the seventeen goals, it has a direct impact on the achievement of 8 sustainable development goals (Figure 3). A detailed description is shown in Table 1.



**Figure 3. Goals through which TU-Sofia has a direct impact**

Table 1. A detailed description of the direct impact of the Technical University of Sofia on the 17 Sustainable Development Goals achievement

	<p><i>Every year the Technical University of Sofia provides free medical examinations for all its employees for the purpose of prevention. All costs are covered by the university's budget.</i></p>
	<p><i>There is no differentiation by gender in student admission and the ranking is carried out according to an objective criterion - the maximum score achieved. Equal access to education is ensured at the university for all groups specified by the UN. There is funding to stimulate and support the educational process of disabled and disadvantaged people.</i></p> <p><i>Training is conducted on topics related to sustainable technologies within the study courses of some of the specialties at the Technical University of Sofia.</i></p>
	<p><i>Sustainability has been achieved by eliminating and preventing all forms of discrimination against women and girls.</i></p> <p><i>Equal opportunities for professional development are provided.</i></p>



*Equal pay for equal work is ensured at the university.  
Sustainability has been achieved in terms of protecting the rights of employees.*



*The Technical University of Sofia promotes both development and participation in the governing bodies of all specified by UN groups.*



*Training is conducted on topics related to climate change mitigation, adaptation, impact reduction and early warning within the framework of various study programs at the Technical University of Sofia.*



*Responsive and inclusive participation and representative decision-making at all levels is ensured.  
Public access to information and protection of fundamental freedoms are ensured following national legislation and international agreements.  
The Technical University of Sofia promotes and enforces a non-discriminatory policy.*



*The Technical University of Sofia maintains and creates new partnerships with scientific, industrial, commercial and non-governmental organizations in the field of sustainable technologies.*

---

# ELECTRICITY

The sustainable use of electrical energy is a key aspect of the sustainable development strategy of the Technical University of Sofia, as the production of electrical energy is the main source of greenhouse gas emissions on a regional and global scale. In its plan for sustainable development in the electricity sector, the Technical University of Sofia strives to ensure a balance between the need for energy and the impact of its production on the environment. Measures that are applicable to achieving this balance include both reducing general consumption and increasing consumption from zero-emission sources such as solar, wind, hydro and nuclear power plants. The tasks that the Technical University of Sofia sets in the context of sustainable use of electrical energy are in line with the goals of the European Union and the current legislation.

## **Reduction of greenhouse gas emissions from electricity production**

### **SET GOALS**

- ☒ Reduction of greenhouse gas emissions from electricity consumption at the Technical University of Sofia by 40% by 2030 (base year: 1990).
- ☒ Increase awareness, engagement and personal contribution among students, academic and administrative staff.

### **PLANNED ACTIVITIES TO ACHIEVE THE GOALS**

- ✓ Carrying out a comprehensive assessment of the electricity consumption by the various structures of the Technical University of Sofia to identify the areas with high electricity consumption.
- ✓ Introducing measures to reduce consumption such as: upgrading lighting systems with energy-efficient LED sources, installing motion sensors to automatically turn off lighting and equipment when not in use, and promoting energy-efficient practices among consumers.
- ✓ Gradually introducing intelligent systems for managing electricity consumption in buildings.
- ✓ Solar lighting construction in the open areas.
- ✓ Exploring opportunities for supply or own production of electrical energy from emission-free sources.
- ✓ Encouraging behavior and habits changes among students, academic and administrative staff of the Technical University of Sofia to reduce individual



electrical energy consumption, such as the use of natural light and ventilation, electric kettles for hot water, instead of an electric stoves, etc.

- ✓ The Technical University of Sofia will continue to maintain and build new partnerships with other organizations committed to sustainability, including government agencies, non-profit organizations and private companies.
- ✓ The Technical University of Sofia will introduce a system of specific indicators for reporting the progress and effectiveness in the electricity sector within the framework of the strategy implementation.

## **Building own infrastructure with emission-free sources of electrical energy**

### **GOAL SET**

- ✓ Construction of own infrastructure with solar systems for electrical energy production for the needs of the Technical University of Sofia.

### **PLANNED ACTIVITIES TO ACHIEVE THE GOALS**

- ✓ Exploring the potential of installing solar panels on the campus (and on dormitories and canteen), including analysis of available space, orientation, shading and energy consumption.
- ✓ Developing a policy for promoting solar energy use and setting a target value for the electricity share generated by solar energy to the total supply mix for the needs of the university.
- ✓ Identifying potential funding sources, such as grants, loans, or shared funding through various partnerships.
- ✓ Installing solar photovoltaic panels at identified suitable locations on campus, such as building roofs, grass or asphalt ground areas, or constructing solar carports.
- ✓ Implementing a system for electrical energy generation and consumption monitoring and identifying optimization and efficiency improvement opportunities.
- ✓ Periodically increasing solar energy use by adding new solar photovoltaic panels.

# HEATING

The sustainable use of thermal energy is an aspect of the university's sustainable development strategy as the heating and cooling of the buildings contribute significantly to greenhouse gas emissions.

## **Reduction of greenhouse gas emissions from heat energy production**

### **SET GOALS**

- ✓ Reducing greenhouse gas emissions from the university's heating and cooling systems by 25% by 2030 (base year: 2015).
- ✓ Increasing awareness, engagement and personal contribution among students, academic and administrative staff.

### **ACTIVITIES INTENDED TO ACHIEVE GOALS**

- ✓ Ensuring energy efficiency in all buildings used by the Technical University of Sofia, including dormitories, canteens and recreation centers, through building stock modernization, including highly efficient insulation construction, three-chamber windows installation and organizing passive solar heating.
- ✓ Construction of intelligent energy management systems for monitoring and controlling the heating and cooling systems in the building fund of the Technical University of Sofia to optimize energy use and minimize energy losses.
- ✓ Construction of own renewable energy sources for heating buildings, such as solar systems or geothermal heat pumps.
- ✓ Construction of centralized heating and cooling systems to increase efficiency, reduce energy losses and reduce greenhouse gas emissions into the atmosphere.
  - ✓ Encouraging changes in the behavior and habits of students, academic and administrative staff of the Technical University of Sofia to reduce individual energy consumption, such as building self-control to turn off lights and electrical devices when not in use, closing windows and doors to prevent heat loss and wearing appropriate clothing to maintain comfort levels.

# TRANSPORT

In the transport sector, the university's sustainable development strategy outlines the set goals and the planned activities for their implementation, aimed at reducing the impact of university transport on the environment, promoting opportunities for sustainable transportation for students, teachers and administrative staff and engaging the community with addressing the challenges related to the sustainable development of the transport sector.

## **Reduction of greenhouse gas emissions from transport**

### **SET GOALS**

- ✓ Reduction of greenhouse gas emissions from university transport by 25% by 2030 (base year: 2015)
- ✓ Achieving carbon neutrality for university transport by 2050.

### **INTENDED ACTIVITIES TO ACHIEVE GOALS**

- ✓ Promoting sustainable transport options such as cycling, walking and public transport to reduce greenhouse gas emissions from commuting.
- ✓ Encouraging the use of electric and hybrid vehicles for the university's needs.
- ✓ Providing charging infrastructure for electric and hybrid vehicles.
- ✓ Providing incentives for carpooling and remote work with partners from other settlements..

## **Promoting sustainable transport options**

### **SET GOALS**

- ✓ An increased number of students and employees using sustainable transport options by 50% by 2030.
- ✓ Achieve 75% shift to sustainable transport solutions by 2050.

### **INTENDED ACTIVITIES TO ACHIEVE OBJECTIVES**

- ✓ Developing a comprehensive sustainable transport plan that includes cycling, walking and public transport infrastructure.
- ✓ Providing secure and convenient bicycle parking.
- ✓ Establishing a bicycle-sharing program by students, academic and administrative staff.
- ✓ Promoting public transport options, including subsidizing transport cards.
- ✓ Providing education and information to students, academic and administrative staff about sustainable transport options.

### **Public engagement to meet the challenges, related to achieving sustainability in transport**

#### **SET GOALS**

- ✓ Establishing partnerships with at least 5 local organizations aimed at addressing sustainability challenges in transport by 2025.
- ✓ Increasing education among the public and popularizing topics related to transport sustainability by 50% by 2030.

#### **INTENDED ACTIVITIES TO ACHIEVE GOALS**

- ✓ Creating partnerships with local organizations to address sustainability challenges in transportation by promoting public transportation, reducing greenhouse gas emissions, and improving air quality.
- ✓ Participation in public events related to sustainable transport, such as bike days, public transport fairs and public bike rides.
- ✓ Providing education and information on sustainable transport topics to the local community, including primary and secondary schools, community organizations and local businesses.

# WATER RESOURCES

In the water resources sector, the Technical University of Sofia's strategy for sustainable development outlines the goals set and the planned activities for their implementation, aimed at reducing the amount of water used by the university, promoting opportunities for sustainable use of resources by students, teachers and administrative staff and community engagement in addressing the challenges of sustainable water use.

## **Reducing water consumption and promoting sustainable water use practices**

### **SET GOALS**

Reduction of total water consumption by 25% by 2030 (base year: 2015).  
Implementation of practices for sustainable water resources use.

### **INTENDED ACTIVITIES TO ACHIEVE GOALS**

- ✓ Carrying out a comprehensive assessment of water resource usability in the university to identify the areas with high water consumption and outline the priorities of resource-saving measures.
- ✓ Installing controlled or reduced flow devices such as toilets, showers and faucets to reduce water consumption.
- ✓ Implementing landscape practices that ensure efficient water use, such as landscaping with native plant species, rainwater harvesting, drip irrigation, etc.
- ✓ Introducing reuse systems of water from siphons and rainwater harvesting to reduce the amount of potable water used in devices such as toilet cisterns, irrigation systems, washing systems for pavement areas, etc.

## **Increase awareness and provide education about sustainable water use**

### **SET GOALS**

- ✓ Increasing awareness and education about sustainable water use by 50% by 2030.
- ✓ Increasing the university's participation in various scientific and educational programs related to water resource protection by 25% by 2030.

### **INTENDED ACTIVITIES TO ACHIEVE GOALS**

- ✓ Creating educational courses and providing information about sustainable water use practices among students, academic and administrative staff by conducting workshops and seminars, providing online resources and various awareness campaigns.
- ✓ Developing a water conservation program for the entire university campus, including specific values of water saved, conducting competitions and providing various incentives.
- ✓ Including practices for sustainable water use in curricula and intensification of research activities aimed at sustainable water resources use.

### **Public engagement to meet the challenges, related to achieving sustainability in the water sector**

#### **SET GOALS**

- ✓ Establishing partnerships with at least 5 local organizations aimed at addressing challenges related to sustainable water resources use by 2025.
- ✓ Increasing education among the public and promoting sustainable water resources use by 50% by 2030.

#### **INTENDED ACTIVITIES TO ACHIEVE GOALS**

- ✓ Establishing partnerships with local organizations to address challenges related to the sustainable use of water resources, such as reducing water consumption, protecting water sources and improving water quality indicators.
- ✓ Participating in public events related to sustainable water resources use, such as organizing public seminars on the topic, participating in events to clean water sources (for example, rivers in the area of the university and its affiliates), joint construction of rainwater harvesting installations and others.
- ✓ Providing education and information on the sustainable use of water resources to the local community, including primary and secondary schools, community organizations and local businesses.

# WASTE

In the waste sector, the university's sustainable development outlines the goals set and the planned activities for their implementation, aimed at reducing the amount of waste generated by the university, promoting sustainable waste management practices among students, teachers and administrative staff and engaging the community in addressing the challenges of sustainable waste management.

## **Reducing generated waste and promoting practices for sustainable management**

### **SET GOALS**

- ✓ Reducing the total amount of waste generated by 50% by 2030 (base year: 2015).
- ✓ Implementing sustainable waste management practices through reduction of waste, reuse and recycling.

### **INTENDED ACTIVITIES TO ACHIEVE GOALS**

- ✓ Performing a comprehensive waste assessment to identify areas of high generation and prioritize waste reduction measures.
- ✓ Implementing a waste reduction program: composting, reducing food waste and reducing paper use.
- ✓ Encouraging the use of reusable products such as water bottles, coffee cups, utensils, etc., and purchasing products with minimal packaging.
- ✓ Increasing the use of digital documents instead of paper ones.
- ✓ Implementing a recycling program for all recyclable materials, including paper, cardboard, plastic and metal.
- ✓ Reusing junk products that are in good condition by donating them (e.g. books) or using them at another site of the Technical University of Sofia (e.g. furniture and equipment).
- ✓

## **Raising awareness and improving education about sustainable waste management**

### **SET GOALS**

- ✓ Increasing awareness and improving education about the sustainable waste management by 50% by 2030.
- ✓ Increasing the university's participation in various programs related to sustainable waste management by 25% by 2030.

### **INTENDED ACTIVITIES TO ACHIEVE GOALS**

- ✓ Implementing educational courses and providing information about sustainable waste management practices among students, academic and administrative staff by conducting workshops and seminars, building online resources and various awareness campaigns.
- ✓ Developing a sustainable waste management program for the entire university campus, including specific values of reduced waste generation or its reuse/recycling, organizing competitions and providing various incentives.
- ✓ Including sustainable waste management practices in curricula and intensifying research activities in the field.

## **Public engagement to address the challenges of sustainable waste management**

### **SET GOALS**

- ✓ Establishing partnerships with at least 5 local organizations aimed at addressing the challenges of sustainable waste management by 2025.
- ✓ Increasing education among society and popularizing topics related to sustainable waste management by 50% by 2030.

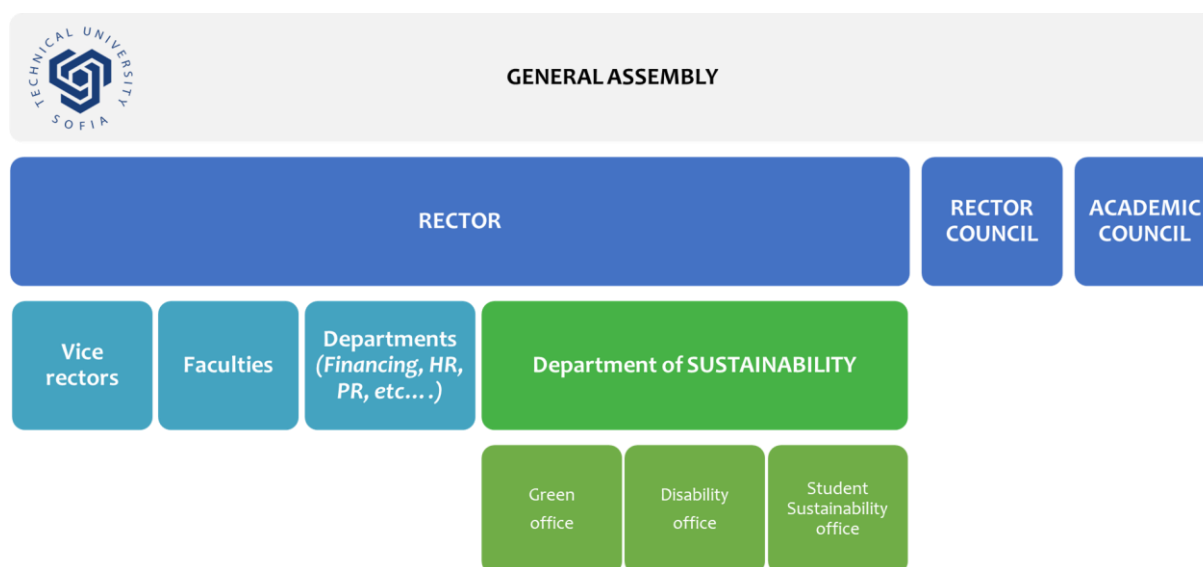
### **INTENDED ACTIVITIES TO ACHIEVE OBJECTIVES**

- ✓ Creating partnerships with local organizations to address challenges related to sustainable waste management, such as reducing waste generation, recycling and composting.
- ✓ Participating in public events related to sustainable waste management, such as organizing public seminars on the topic, participating in events for cleaning surrounding territories (including for the branches and bases of the Technical University of Sofia), and building projects for reuse of waste products.
- ✓ Providing education and information on sustainable waste management topics to the local community, including primary and secondary schools, public organizations and local companies.



# Administrative service of the activities set out in the Sustainable Development Strategy of the Technical University of Sofia

For the implementation of the activities related to the achievement of the sustainable development plan, the Technical University of Sofia has a separate Department of Sustainability, which includes a Green office, a Disability office, and a Student Sustainability office - Figure 4.



**Figure 4. Department of Sustainability in the structure of the Technical University of Sofia**

The Department of Sustainability summarizes and structures measurable sustainability indicators by sectors: 17 UN Sustainable Development Goals, electrical energy, thermal energy, transport, water resources, and waste. Based on the obtained results, a report is drawn up annually, in which the progress in the implementation of the activities and the achievement of the set goals are tracked. When analyzing the data, the department prepares an opinion on the implementation of the indicators and the need to introduce new measures, which is submitted to the management of the Technical University of Sofia.

One of the main commitments of the Department of Sustainability is related to the certification of the Technical University of Sofia according to the ISO 14001 standard for environmental management systems and its subsequent implementation and maintenance in the activities carried out by the university falling within its scope. The working and reporting documentation of the department is prepared according to internal rules.

## **Green Office**

The Green Office within the structure of the Department of Sustainability is focused on the promotion and implementation of sustainable practices on the university's campus. The mission of the office is aimed at the activities that the university carries out to reduce its impact on the environment, with the main priorities being the issues related to the possibilities of reducing the used energy and increasing the energy obtained from renewable sources, reducing the waste amount, environmental friendliness of transport and water conservation.

In its work, the Green Office collaborates with other departments related to facilities and building stock management, as well as student organizations, to implement sustainability initiatives on campus. The Green Office is also responsible for providing educational resources and additional opportunities for students, academic and administrative staff. The Green Office activities also include conducting assessments of the environmental impact caused by the functioning of the university and developing and implementing specific measures to reduce it.

## **Disability Office**

The Disability Office is a unit within the Technical University of Sofia that provides support and services to students with disabilities. The primary goal of the Office is to ensure that students with disabilities have equal access to academic programs and activities on campus.

Some of the services offered by the office for people with disabilities are aimed at adapting learning and academic activities for students, such as providing extra time to complete exams, help with note-taking, and assuring accessible study materials. If funding is available, the unit will also offer to provide assistive technology such as screen readers or speech-to-text software.

In addition to supporting students, the Disability Office is expected to provide training to faculty and staff to help them accommodate students with disabilities. The end goal of the activities carried out by the Disability Office is to create an inclusive and welcoming environment at the Technical University of Sofia, in which students with disabilities can develop academically and socially.

## Student Sustainability Office

The Student Sustainability office is a unit at the Technical University of Sofia that promotes the achievement of sustainability and environmentally responsible practices on campus. The main objective of the Student Sustainability office is to raise awareness of issues related to achieving sustainability, to promote environmentally responsible behavior among students, academic and administrative staff, and to support the implementation of sustainable activities in the work of the university.

Some of the key areas related to the work of the Student Sustainability office at the Technical University of Sofia include:

- **Education and Promotion:** The Student Sustainability office organizes events, seminars and campaigns to educate students, academic and administrative staff about current issues related to achieving sustainability and promoting new sustainable practices on campus.
- **Green Initiatives:** The Student Sustainability office implements or supports various green initiatives on campus, such as recycling programs, energy conservation measures, sustainable transportation opportunities, or ecological landscaping.
- **Collaboration:** The Student Sustainability office collaborates with other departments and units across the university, student organizations, and local community groups to promote sustainability and create a culture of environmental responsibility.
- **Research and Evaluation:** The Student Sustainability office conducts research or carries out evaluations to identify areas where the campus can improve its sustainability practices, and develops strategies and recommendations to address those areas.

